CLAIMS

[0090] What is claimed is:

Claim 1. A receiver comprising:

a channel estimator to generate a maximum likelihood estimate of one or more channel taps from an equation involving a) said one or more channel taps, b) a priori probabilities of transmitted symbols in one or more samples of a received signal, and c) one or more noise samples,

wherein said equation is an implicit equation for said one or more channel taps.

Claim 2. The receiver of claim 1, wherein said channel estimator is to generate said estimate for a batch of samples at a time.

Claim 3. The receiver of claim 1, wherein said channel estimator is to generate said estimate for a single sample at a time.

Claim 4. The receiver of claim 1, wherein said one or more channel taps correspond to one or more active fingers of a rake receiver.

Claim 5. A channel estimator comprising:

a symbol probability generator to generate a priori probabilities of transmitted symbols in a received signal;

a noise variance estimator to estimate a variance of noise corrupting said received signal; and

a channel tap estimator to generate a maximum likelihood estimate of one or more channel taps using the equation

$$\hat{h}_{ML} = \frac{1}{2T} \cdot \sum_{t=1}^{T} \bar{y}(t) \cdot z\left(t; \hat{h}_{ML}\right)^{*},$$

where $\bar{y}(t)$ denotes a vector of a downconverted and demodulated sample of said received signal, t denotes a time variable, $\hat{h}_{ML}$ denotes said maximum likelihood estimate, T denotes a sampling duration, $(\bullet)^{*}$ denotes the conjugate of the bracketed expression, and $z\left(t; \hat{h}_{ML}\right)$ denotes a mathematical scalar process

involving said a priori probabilities, said variance, said vector and said maximum likelihood estimate.

Claim 6. The channel estimator of claim 5, wherein said channel tap estimator comprises:

means for generating a scalar value according to said mathematical scalar process from said a prior probabilities, said variance and said maximum likelihood estimate;

means for combining said scalar value with said vector; and

means for determining said maximum likelihood estimate from an output of said means for combining.

Claim 7. The channel estimator of claim 6, wherein said means for determining said maximum likelihood estimate comprises a summer over a window of received symbols.

Claim 8. The channel estimator of claim 6, wherein said means for generating said scalar value include means for retrieving said scalar value from a lookup table.

Claim 9. The channel estimator of claim 5, wherein said received signal comprises output of one or more despreaders.

Claim 10. The channel estimator of claim 5, wherein said received signal comprises output of more than one antenna.

Claim 11. A receiver comprising:

a first channel estimator to generate an estimate of one or more pilot channel taps of a continuous pilot channel; and

a second channel estimator to generate a maximum likelihood estimate of one or more second channel taps of a traffic channel carrying data symbols and interleaved pilot symbols from an equation involving a) said one or more traffic channel taps, b) a priori probabilities of transmitted symbols received over said traffic channel, and c) one or more noise samples, wherein said equation is an implicit equation for said one or more traffic channel taps.

Claim 12. The receiver of claim 11, further comprising:

means for combining said estimate of said one or more pilot channel taps and said maximum likelihood estimate.

Claim 13. A method comprising:

generating a maximum likelihood estimate of one or more channel taps from an equation involving a) said one or more channel taps, b) a priori probabilities of transmitted symbols in one or more samples of a received signal, and c) one or more noise samples,

wherein said equation is an implicit equation for said one or more channel taps.

Claim 14. The method of claim 13, wherein generating said estimate comprises generating said estimate for a batch of samples at a time.

Claim 15. The method of claim 13, wherein generating said estimate comprises generating said estimate for a single sample at a time.

Claim 16. A method comprising:

generating an estimate of one or more pilot channel taps of a continuous pilot channel; and

generating a maximum likelihood estimate of one or more second channel taps of a traffic channel carrying data symbols and interleaved pilot symbols from an equation involving a) said one or more traffic channel taps, b) a priori probabilities of transmitted symbols received over said traffic channel, and c) one or more noise samples, wherein said equation is an implicit equation for said one or more traffic channel taps; and

combining said estimate of said one or more pilot channel taps and said maximum likelihood estimate.